

Hobbies

WEEKLY

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Price Threepence

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DESIGN FOR A SMALL MODEL OF THE HALFPENNY GALLEON	

Vol. 107 No. 2778

How to build a small BAGATELLE TABLE

A SMALL table on which this popular game can be played can be quite easily made. Having regard to the shortage of wood, quite a small table has been designed, but still large enough to provide many hours of enjoyment.

Suitable balls for the game would be $\frac{1}{8}$ in. erinoid ones, such as are supplied with certain games of the pin-table type. These should be white, with one red ball, eight of the former being required and one of the latter.

Suitable Balls

Should any difficulty arise over obtaining the balls, good quality marbles could be substituted, but the erinoid balls should be obtainable at most games and sports shops.

Fig. 1 shows a plan of the table. The material for this can be plywood, plywood substitute, or $\frac{1}{8}$ in. thick matchboarding. Some kinds of building board might serve if of sufficiently smooth surface. If the matchboarding has to be used, glue enough pieces together to make the width, and use it with the beaded edges underneath. Keep quite flat and glasspaper it smooth as no ridges must appear at the joints.

Describe the circle shown, divide into eight equal parts, and on each part bore a $\frac{1}{8}$ in. hole right through the board. Then cover the board with baize, gluing it at the sides, and round the holes. No need to glue it all over.

When the glue is hard, cut the

baize away over the holes with a sharp penknife. Take great care to see the baize lies quite smooth, and free of creases and wrinkles. A rub over with the household iron, not too hot, will improve the surface for the balls to run over.

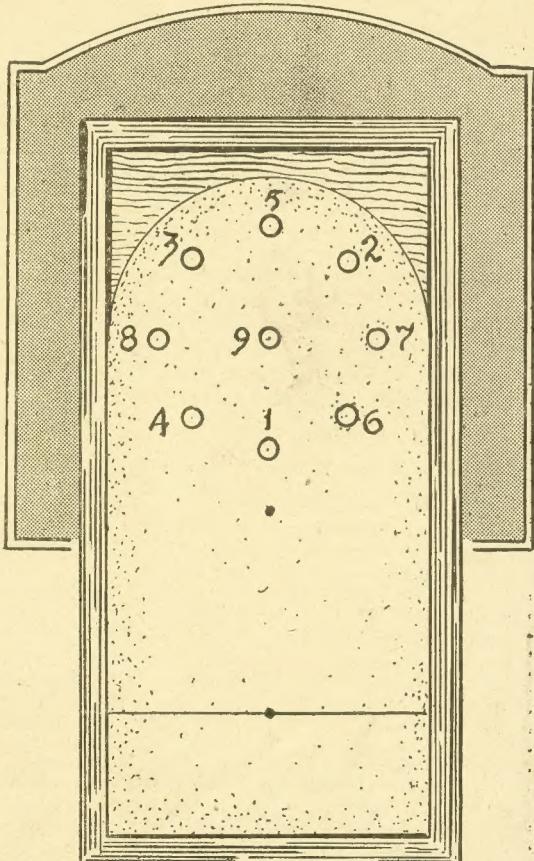
Table Boards

Cut two pieces of the board the full width of the table and 3ins. and 10ins. wide respectively, and glue and screw these underneath the table, as shown in the side view in Fig. 1. It will be seen that the wide piece will cover the holes underneath, making cups of them. Now trim off any surplus baize extending over the table, cutting it off with a sharp knife, not scissors.

Framing

A frame of 1in. square strip deal is now made to the same dimensions as the table. This is joined at the corners with a tongued and slatted joint, as in Fig. 2, A.

See the frame is square and not out of winding, then fix it to



Measure: 1ft. 10ins. long and 14ins. wide

the table with screws, driven in from underneath. Countersink these screws, as no heads must project which might prevent the table lying flat. The corner detail, A, shows the table at this stage.

A semi-circular run for the balls must be provided at the top. To make this, plane a suitable piece of wood to $\frac{3}{8}$ in. thickness and cut it to width given in Fig. 3, and about 14 ins. long. Run a gauge line at 1 in.

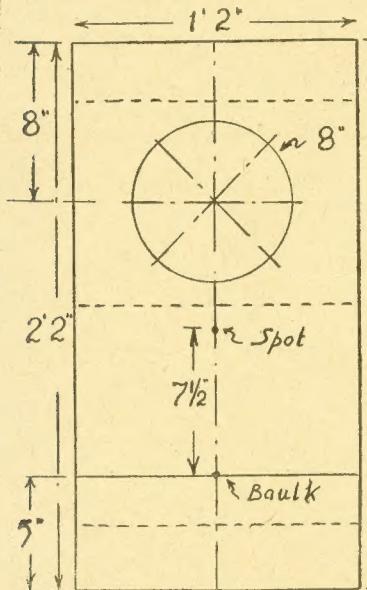


Fig. 1—Plan and section of board layout

from the bottom edge, and on this strike the circle shown.

Cut off the bottom 1 in., then saw neatly round the semi-circle. Now saw across the board at the extreme ends of the semi-circle, then fix the run to the top of the board with a few screws from underneath.

Stain and Varnish

The board should now receive a coat of mahogany or walnut stain, and the show parts two coats of varnish. The cups can be stained black and the numbers, seen in the finished view of the table, painted neatly in white paint. All around the inside edges a strip of rubber, $\frac{1}{4}$ in. wide, should be fixed with glue, as in detail sketch, B. in Fig. 2. The sort fixed to edges of doors and obtainable from ironmongers will do well.

Or the rubber for this part can be cut from an old cycle or motor inner tube. Roughen one side of the rubber with coarse glasspaper, apply some hot glue to the roughened

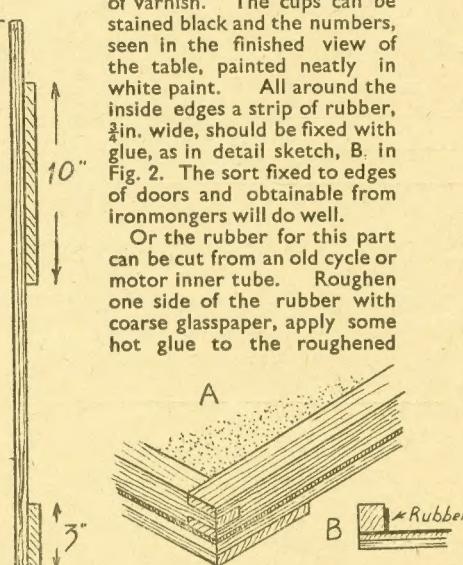


Fig. 2—Detail of frame and rubber

surface and fix all round. Where joints are necessary, see the ends butt neatly together and do not overlap to leave an unwanted bulge.

Put in the baulk line with a soft lead pencil, and in the centre of it, and on "spot", fix gummed discs of paper. The "spots" can be bought ready made at sports shops and save trouble. A small cue will be needed and this can also be bought, or shaped up from dowelling, as preferred.

How to Score

Scoring is done by pegging, holes for the pegs being bored in the framework of the table, in the full sized article. For a small size table, like this one, scoring could be carried out on a cribbage board.

Some little improvement in the appearance of the board can be effected by gluing around a thin strip of wood to hide the cut edges of the baize and plywood. Not essential, of course, but if the reader likes to take the extra trouble, and has the wood to spare, it could be done.

The board is now complete and will provide hours of amusement. It takes up little space but a box should be provided for the balls to prevent loss.

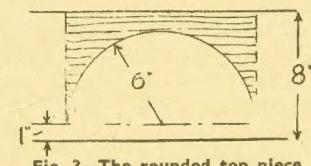


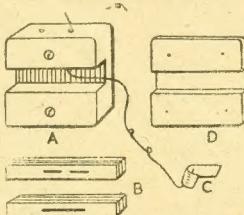
Fig. 3—The rounded top piece

A Reader's Light Switch

HERE is a short article on hand-made light switches. Mr. S. Final, of Amersham, who sent it in, has made several for use on toys and articles about the house, bedroom lamp, doll's house lighting, etc. The particular one in question is in use suspended from a light over the back of a bedstead, and very convenient.

This small switch is ideal for two purposes. As a permanent fixture, or one suspended from the light as in the case of a lamp fitted over the back of a bedstead. In either case the switches are identical with the exception of two screw holes if the switch is to be fixed to the article permanently.

Single strand plastic-covered bell wire is used in this illustration at Fig. A, with $\frac{1}{8}$ in. wood 1 in. square. Make a groove in the centre $\frac{1}{8}$ in. wide by $\frac{1}{8}$ in. deep. Drill two $\frac{1}{16}$ in. holes in the plain



side $\frac{1}{8}$ in. from each end, the holes entering the groove at a low point. Holes for screws should now also be drilled as shown, only if switch is for permanent fixture.

The part shown at Fig. B is three plywood $\frac{1}{8}$ in. by $\frac{1}{8}$ in. by $1\frac{1}{2}$ ins. Remove the plastic cover from a short length of wire and thread through the strip as shown $\frac{1}{8}$ in. from one end, $\frac{3}{8}$ in. from other. Pull tightly and press the ends flat. Smooth the strip until movement in the groove is free, having the ends of the wire uppermost during all operations.

The contact piece is shown at Fig. C. Select roughly the lengths of wire required and from any odd piece of tin (not rusty), cut two lengths $\frac{1}{8}$ in. by $\frac{1}{8}$ in., bend one end of each. With wire in the bends (it is advisable to include fraction of plastic covering), clamp the bent portions and wire very firm. Thread the free ends of the wire through holes shown in A until the contacts, C, rest tightly in bed of groove with pressed portions face down and plain ends facing outwards. These ends should not overlap the groove.

Now place strips, B, over contacts and test light. With the $\frac{1}{8}$ in. end flush with the mouth of the groove, the light should be on. If this is so, move $\frac{3}{8}$ in. end along the groove and contacts, until light is off and only one contact is connected with strip wire. At this point mark strip flush with mouth of groove and cut this portion off. The picture at Fig. D is of a piece of plywood $\frac{1}{8}$ in. thick, but exact shape as A, and groove as A1 thickness at first.

Place over the switch and strip B. Hold firmly and push strip B to and fro, making groove, D, deeper if necessary until resting squarely over A and B, with strip, B, moving tightly. Nail D to A and the switch is complete, unless required permanently on the article, when the screws should be used first.

Failure to light can be rectified by a thin wedge between D and B.

The home handyman should know how to deal with FUSES AND FLEX.

In most cases there is no reason why an electric fuse should not be replaced by the householder at home, but before doing so it is as well to be acquainted with a few simple facts. In the first place as far as possible, the cause of the fuse blowing should be located.

A piece of bad flex which becomes shorted will, of course, blow a fuse thus breaking the supply. This may happen in the lighting circuits, or in the circuit supplying current to the heating or power points.

If the trouble takes place in the presence of the consumer, it is quite a simple matter to locate the cause of the fuse blowing. Before replacing

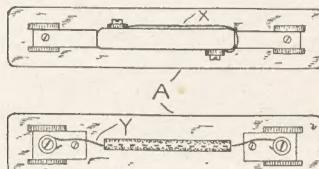


Fig. 1—Two common types of bridge fuses. In the fuse, therefore, the cause of the current failure must be removed or the fuse will promptly blow again.

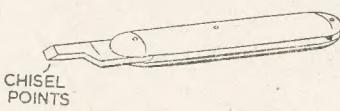
In some cases where trouble will cause both lighting and heating circuits to fail, the consumer should notify the supply authority, since it will be the main supply fuse which has blown.

General Types

There are many types of what are termed fuse carriers which hold the thin strip of wire called the fuse, and a few of these are indicated in the accompanying illustrations. Two types of heating fuses found in the main switch which supply current to the heating plugs are indicated at A in Fig. 1.

Pocket Knife Chisels

POCKET knives with broken blades can be converted into excellent little chisels for delicate work, in repairs or model making. All that is necessary is to grind the broken blade



or blades to shape, care being taken not to overheat the steel and ruin temper. Chisels $\frac{1}{8}$ in. and $\frac{3}{16}$ in. can be made.

In the top view the fuse wire is indicated at X, which is fixed under the washers of the two small screws as clearly shown. When trouble takes place in the heating circuit, this piece of wire will become melted and thus shut off the current. The fuse wire in the other type of heating carrier is indicated at Y, which passes through a piece of fibre as clearly shown.

Correct Sizes

When renewing the fuse in the heating circuits it is important to use the correct size wire. Wire is to be obtained from any electrical shop supplied on a card marked 20 amp., 15 amp., or 5 amp., and the 20 or

15 amp. size should be replaced in these carriers. As a guide, use 20 amp. wire where a two-bar fire is used, and for a single bar fire the 15 amp. wire will do.

When the main switch is switched off, it is quite a simple matter to remove the carrier and fix the wire between the screw terminals. For the lighting circuit one type of carrier is indicated at B, and another quite common type is shown at C in Fig. 2. The fuse in the type B is indicated at D, and in view, C, the fuse is held between two terminal screws and passes through the body of the holder as indicated by the dotted line, E.

Switch Off First

For household lighting circuits the 5 amp. fuse wire is used, and it is quite a simple matter to fix the wire between the terminal screws. One final word in replacing fuses—take care to switch off the main switch.

Quite a number of other small

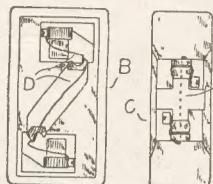


Fig. 2—Two lighting fuses

repairs can be made to electrical items in the home, if careful attention is given to the matter. The electric iron may fail to get hot, or the cleaner will not work. Or maybe the fire will not come on, and above all down comes the kitchen light at some awkward moment.

All these and many other failures may be due to the flex becoming broken. If the repair is to be made at home, it is important to be on guard against one or two points. The first thing to do is to cut the flex back to make sure the broken end is cut away, and the end is sound to make a new contact.

No Bare Ends

When trimming the end of the flex be quite sure to avoid the mistake which is illustrated at A, Fig. 3, in the accompanying illustrations. Here we have the flex trimmed with the bare wire exposed beyond the point of connection as indicated at X. It must be clearly understood that if the bare conductors touch when the item is switched on, a short circuit will result with the blowing of a fuse and more trouble.

Where the end of the flex is to make contact with the terminal

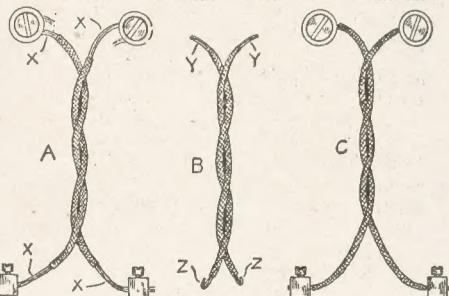
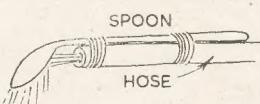


Fig. 3—How to deal with flex fitting

under a washer, trim the flex, keeping the bare wire short, as indicated at Y in view B, Fig. 1. If the flex is to be re-connected to a screw contact, such as lamp holders and plug tops, trim the end short and double back the bare wire as indicated at Z.

Preventing Trouble

If the flex is carefully prepared in this manner, the bare ends will be well in the contacts as indicated in view C, thus avoiding the danger of trouble with fuse blowing. It must be remembered that when connecting the flex to the terminals of a ceiling rose, make sure the main switch is switched off, and always remove the plug from the switch socket when repairing the flex to any item.



the force and size of the spray will be altered. Instead of tying on you can use two strong rubber bands which will allow the spoon to be removed easily when desired.

Youngsters will enjoy to ride in this simply-made TOY ROCKING BOAT

HERE is a jolly little rocking boat to delight the tiny tots. It is 3ft. 3ins. long, and has a seat length of 10½ins. Of course, both these dimensions could be increased if desired, but the actual proportions, length to width should be kept as far as possible. The work of cutting the various pieces of wood, and the fitting together should not be found difficult as there are no intricate joints to cut and assemble. In fact the whole thing is glued and nailed or screwed together.

The picture, Fig. 1, gives a good idea of the finished ship which should accommodate two or three tiny tots. The first pieces to mark out and cut will be the sides, A, and Fig. 2 gives their overall size and the measurements necessary to follow in marking them out on the board. Two boards each 39ins. long by 6ins. wide and $\frac{1}{2}$ in. thick will be wanted for these.

All the edges after cutting, must be thoroughly glasspapered and made smooth; this same remark applies also to pieces F, which form the seats. To each of the sides is glued and screwed—or nailed—the shaped battens, B, and the squared batten, C, seen in place at Fig. 3.

Batten B is cut from $\frac{1}{2}$ in. wood 14ins. long and 1½ins. wide and is shaped to the outline of piece A. Batten C measures 5½ins. by 1in., and

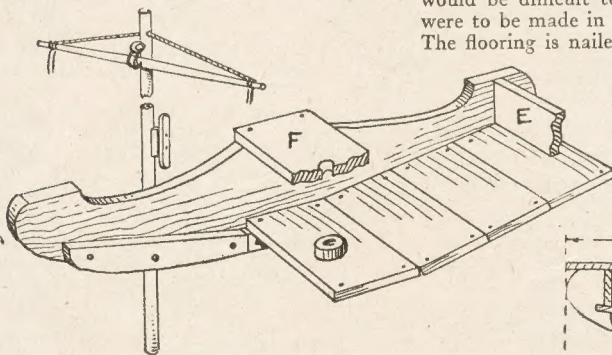


Fig. 4—Construction detail of floor boards, sides, seat and mast

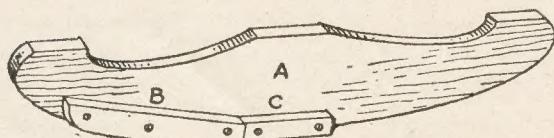


Fig. 3—Side shaped with floor supports in place

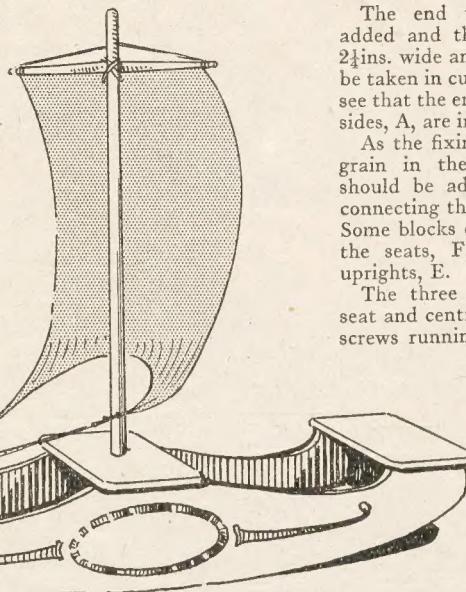


Fig. 1—A picture of the finished article

is also $\frac{1}{2}$ in. thick. These six pieces support the floor of the ship which consists of the cross pieces D, seen in the section and the plan in Fig. 2 and also in detail in the sectional diagram, Fig. 4.

The Floor

The floor is made up of seven pieces of wood each 8½ins. long by 5ins. wide, this width of wood being readily obtainable as ordinary floor boarding, whereas stuff 8½ins. wide would be difficult to get if the floor were to be made in just three pieces. The flooring is nailed to the bearers, extra glued blocking pieces being added in the angles underneath if desired.

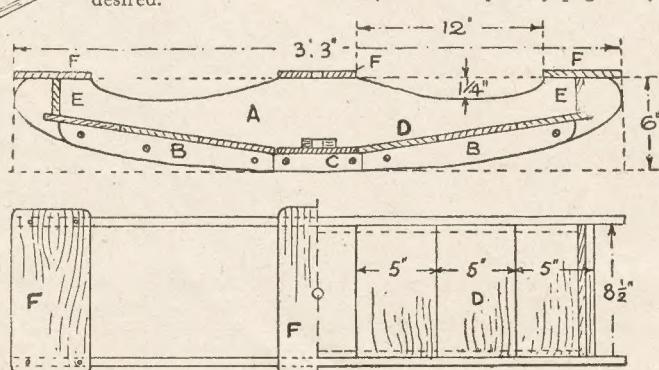


Fig. 2—Side section and plan view with dimensions for marking out

The end uprights, E, are next added and these are 8½ins. long by 2½ins. wide and $\frac{1}{2}$ in. thick. Care must be taken in cutting these two pieces to see that the ends are square so the two sides, A, are in alignment.

As the fixing screws will enter end grain in the two pieces E, there should be added some glued blocks connecting the pieces and the sides A. Some blocks can also be added under the seats, F, to connect with the uprights, E.

The three pieces, F, forming the seat and centre board can be fixed by screws running into the flat surfaces of the sides, A. The pieces, F, measure 10½ins. long by 5ins. wide by $\frac{1}{2}$ in. thick and all edges and corners should be rounded off for safety sake. Note how the three pieces overhang the edges of the sides by $\frac{1}{2}$ in.

and see also that the fixing screws are countersunk and filled with putty or other suitable filling.

Bore a hole in the centre cross board to take the mast, and also cut a disc about 3ins. diameter with a hole cut from the centre to receive the bottom of the mast. Both these additions are shown in the sectional diagram, Fig. 3. The mast can be made from a light-weight broomstick glasspapered to make it smooth for handling. It should be about 36ins. long with a cross spar lashed to it measuring about 15ins.

The top of the mast and the ends of the spar should be rounded and made perfectly smooth. In the detail of the mast and spar shown in Fig. 4, the latter is held by means of a large screw eye running into the mast and

(Continued foot of page 205)

A pleasing and practical gift to make is this handsome PLASTIC DESK SET

MADE in opaque Perspex, this attractive item would be useful on and embellish any desk. Two square type ink bottles are housed in separate compartments, whilst in the centre another compartment houses paper clips, etc. Inside the lid, a small strip calendar is held in Perspex clips. A pen trough completes the facilities.

Although it appears to be a complicated job, the construction is in fact quite straightforward. Fig. 1 shows the details and the various parts have been lettered for easy reference.

The Carcase

Cut out base A, front B, back C and the centre partition D. Trim them to size, then smooth and polish the edges. Carefully mark the position of D on the base A, then cement D in position. Follow by cementing B and C in place and put the assembly aside until the next operation is completed.

Pen Trough

The next job is to make the pen trough E, which is a strip of $\frac{1}{8}$ in. thick Perspex $7\frac{3}{8}$ ins. long and $2\frac{1}{8}$ ins. wide. It is softened and bent over a 3 in. diameter former, such as a glass bottle

and G, are now cut from $1/16$ in. thick material and cemented to B and D respectively.

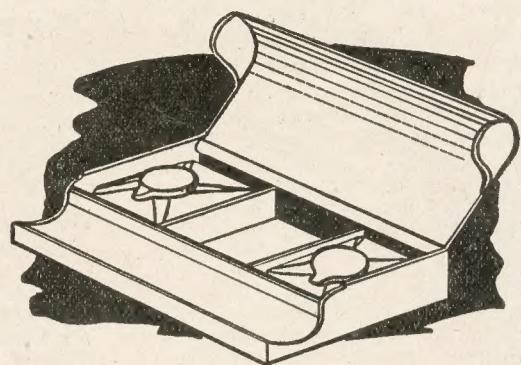
A third support H is trimmed to fit between E and A and is also cemented in place. The pen trough E is now cemented into position, a little cement being brushed along the top of H to hold the tray quite firmly.

The two sides I and J are next cut out and carefully trimmed to shape. Polish the edges and cement them in place. The inner partitions K and L are also cut and fitted at this stage.

Lid

The Set is now complete except for the lid M, which is cut and bent to shape from $\frac{1}{8}$ in. thick material. It is best to make a shaped wooden former as shown in Fig. 2, over which to bend the Perspex, to ensure a snug fit at the front.

Cut a piece of Perspex 8 ins. long by $5\frac{1}{2}$ ins. wide, heat and bend it over the former. Notice that the back edge is placed flush with the edge of the former, so the extra width which



next cut and fitted. These are cemented into the curve of the lid and are used for two purposes. Firstly, they hold the lid curve in shape, as this may vary slightly with differences in temperature. Secondly, these wings close the ends of the pen trough.

Hinging

The lid can now be hinged, which is done by cementing a thickness strip under the back edge, and drilling a small hole through the sides and into this strip for the pivots. Two No. 6 BA roundheaded metal screws are used for pivots and the holes in the sides are tapped 6 BA whilst clearing holes are drilled in the thickness piece.

The back edge of the lid is now trimmed until it opens easily to a point just past the vertical where it is allowed to jamb against C and thus be prevented from falling right back. This slope is governed by the amount of angle filed on C, which should therefore be carefully done, a little at a time, frequently trying the lid until the required angle is obtained.

All that now remains to be done is to cut and fit the handle, which is cemented in place, and to make two chamfered slips to hold a calendar strip. These are cemented inside the lid and spaced so that the calendar can be "sprung" into place.

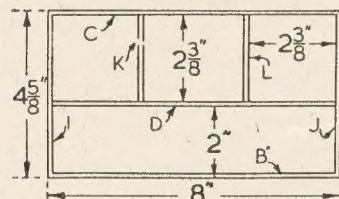


Fig. 1—Plan and section giving details of parts

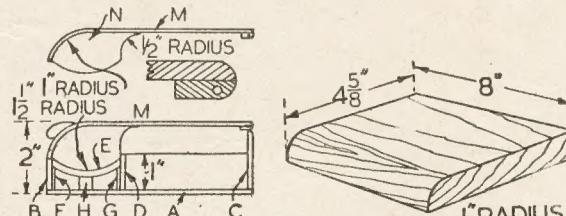


Fig. 2—Shape of lid former

or a tin. This dimension is not absolutely critical and can be reduced to about $2\frac{3}{4}$ ins. diameter without altering the width of the strip.

If a bending former less than $2\frac{3}{4}$ ins. diameter is used, a little extra width should be allowed for E. Having bent E, it is carefully trimmed at each edge with a block plane until it fits snugly between B and D. Two supports, F

has been allowed for subsequent trimming comes at the front. Cut away the top part of the lid so it fits between the top edges of the side. Notice how the fronts of these cut away parts are sloped. If this is not done, the lid will jamb when being closed. The front edge is now trimmed back until the lid rests level.

The two side wings N and O are

Rocking Boat (continued from page 204)

and attached to the spar with large-headed tacks.

Having thus far completed the rocking boat, the mast should be lowered and removed while the painting is being done. First then give all the woodwork a thorough glasspapering, and then add an undercoating of paint. Rub this down lightly with a fine grade glasspaper and give the final coat of paint or enamel. Select some bright

colours to make the article light and attractive looking and add the decorative panel and lines in some contrasting colour on the sides.

Planned deal is most suitable for such a toy as this, and if second-hand or salvaged material is used, then this most certainly will require an additional coat of paint, and probably some hard cleaning work to get a really reasonable surface. Get a good surface and a nice finish.

A cleat may be made from two $\frac{1}{8}$ in. pieces of wood nailed together and fixed to the mast if desired to make a realistic touch to the ship.

The sail may be of calico or other thin material stitched up and shaped

A simple novelty to make is this WIND-DRIVEN TRUCK

EVER since the time of the Romans windmills have been used as a cheap and efficient means of providing power for a large variety of purposes—from grinding corn and pumping water to generating electricity. The model car described here is driven forward by the wind and the stronger the wind blows the faster it will travel.

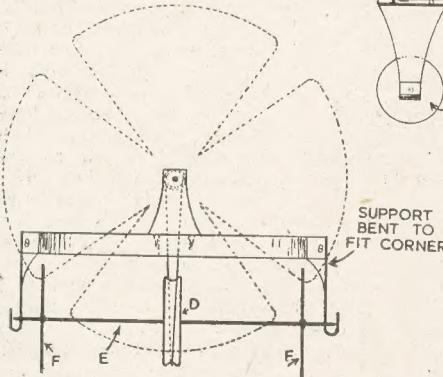
Before starting to make the model let us examine the drawings and see exactly how it works. The force of the wind blowing on to the vanes of the windmill A, causes the shaft B to rotate at varying speeds according to the wind's force.

Main Drive

On this shaft is a small pulley C, which, in turn, drives a much larger pulley D. This pulley is fixed to the main driving spindle E, as are also the two wheels F. You will thus see that when the wind is strong enough to spin the windmill fairly rapidly the car will move along at quite a good speed. The small wheel at the rear is a free one just to carry the weight of the baseboard.

Now for the actual making of the model—quite an easy job, from just odds and ends to be found about the house.

It is necessary to point out that everything must be made as light and



Front view—vanes shown dotted

easy-running as possible. If you turn out a clumsy job you may find that the limited power of the wind is insufficient to drive it along.

The Vanes

The 4 in. circle of metal for the windmill vanes was cut from the sides of a cocoa tin. You can make as many vanes as you like, but four or five will be quite sufficient, as there is no advantage in having more.

Having decided how many you want, mark out the circle, divide it up and draw to within $\frac{1}{2}$ in. of the

centre. Cut out with a metal fretsaw or a pair of shears. The corners of each vane should be rounded as they would be dangerous if left sharp. Finish off the edges with a file and emery cloth and twist each vane carefully to an angle of 45 degrees. It does not matter which way you twist as you will see later.

The Spindle

For the spindle B, use a fairly fine knitting needle—a piece about 2 in. long is sufficient—leaving a pointed end to go on to the thrust plate G. This acts as a kind of ball bearing and makes for easy running.

Drill a hole in the centre of the vanes and solder in the spindle. If you cannot solder you may cut a 1 in. circle of wood, screw the vanes on to this and push it on to the spindle making it a tight fit. The two bearings for this spindle can be cut from the cocoa tin, as may also the two for the driving spindle and the free wheel at the back.

The thrust plate is just a continuation of the back support bent over so it lines up with the bearing holes, which may be either punched or

from coming out—a small blob of solder would be sufficient.

The driving wheels are also cut from the tin. Make them 1 $\frac{1}{2}$ in. in diameter and be sure they are perfectly round to ensure easy running. The spindle for these wheels is another piece of knitting needle with both ends pointed. A 1 in. wooden pulley is fixed on the spindle before soldering on the two wheels.

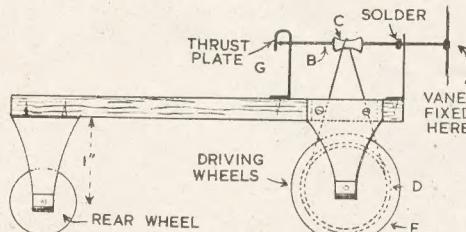
Again, if you do not like soldering you may make thin wooden wheels, but tin ones are certainly much better. Both the tin supports for the driving wheels are made with thrust plates and the spindle should fit between these leaving just a little side shake.

The Rear Wheel

The free trailing wheel at the back is very simple to make and does not require much explaining. It is about $\frac{1}{2}$ in. in diameter and the supports are of sufficient length to keep the base parallel with the ground.

It only remains for a trial of the model. Blow on the front of the vanes to see which way they revolve as this determines which way to fix the belt. Put it on so as to drive the car forward.

A piece of fine string will do for the belt, or better still, use a thin strip of elastic. Instead of joining it with a knot, which is rather clumsy for going over the small pulley, lap the two ends and bind lightly with

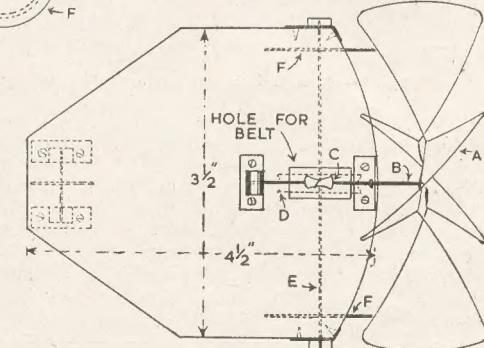


A side view of truck

drilled. Make sure that these holes are nice and round and an easy fit for the spindle, but not too easy. A small rat-tail file should be used to finish them off, keeping it at right angles to the hole and twisting like a drill.

The baseboard is a piece of thin light wood about 4 $\frac{1}{2}$ ins. long, 3 $\frac{1}{2}$ ins. wide and $\frac{1}{8}$ in. thick. The front edge is rounded to clear the vanes when revolving, while the back is tapered off to make it lighter. A hole is cut rectangular, as shown, or circular, in the centre of the board near the front for the driving belt.

Before the vanes and spindle are assembled a very small shallow wooden pulley is tightly fitted between the two bearings. A small washer is also placed just behind the front support to keep the spindle



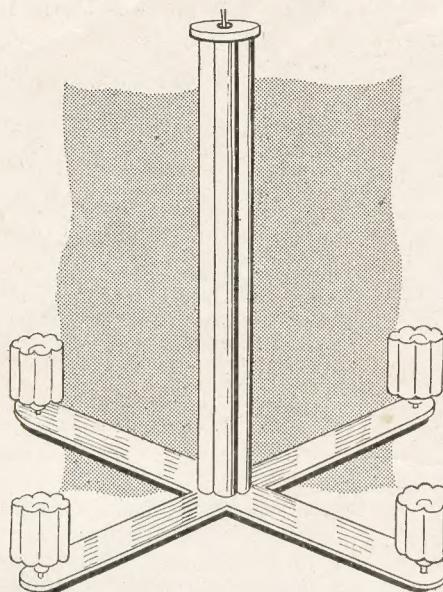
Plan of truck, vanes and mechanism

cotton. You will find the correct tension by experiment.

It may be an advantage to chamfer the front edge of the wooden base to make it somewhat streamlined.

Take care with all the parts you make to get them correct. It may be necessary to get the required result by trial and error, altering as needed by the parts and the wind.

Some wood and broomsticks can be formed into A NOVEL CANDLABRA



THE materials needed for this fine modern-looking candelabra are some lengths of $\frac{1}{2}$ in. wood, two broomsticks, four lampholders, some parchment, wire, pieces of tin, and flex—all of which should not cost more than a few shillings, as against the high prices charged in shops for these popular lamps.

The Cross Arms

From the $\frac{1}{2}$ in. wood cut two lengths 18ins. by $2\frac{1}{2}$ ins. with round ends, and two lengths 17ins. by $2\frac{1}{2}$ ins. also with round ends. Join each pair into a right-angled cross with a half-mortise. Taking the larger cross, so formed (see Fig. 1) drill a $\frac{3}{8}$ in. hole at each arm $1\frac{1}{2}$ ins. from the end. Also drill a $\frac{3}{8}$ in. hole in the very centre of the cross. Chisel four grooves $\frac{1}{4}$ in. wide and $\frac{1}{8}$ in. deep, joining each outside hole with the centre one. This groove is deep enough to take the wires.

The two broomsticks (which are better made of ash if you can get them) should give you four lengths

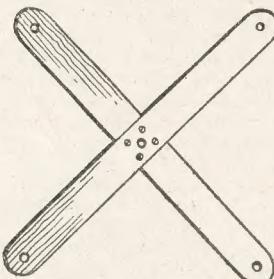


Fig. 1—The crossed strips forming arms

of 24ins. to form the main stem of the lamp. When cut to length a good idea is to tie a string round them tightly until they are properly fixed into position. Next cut two 3in. circles from plywood. In one cut four holes the diameter of the four tied broomsticks and in the other a $\frac{3}{8}$ in. hole in the centre (see Fig. 2). Then glue them together and fit on to the broomsticks; fix the other end of the broomsticks to the large cross, and your candelabra begins to take shape.

Lampholders

The lampholders required are the type made for table-lamps fitted with a short, threaded brass cylinder. Before fitting these into the holes cut a piece out of each one as shown (Fig. 3), being careful not to leave any rough edges. Now fit them so that the piece cut out coincides with the grooves already cut in the wood.

The Wiring

Take a piece of flex 40ins. long, and 27ins. from one end separate the two wires. At this point strip about $\frac{1}{2}$ in. of each one to the bare wire. Join three more pieces of single wire of 13in. length with a spot of solder, and insulate the joins well with tape (see Fig. 4). Thread the double flex through the broomsticks and fit the two joins into the hole in the centre of the cross.

Now take one from each set, pass along the grooves and up through the brass cylinders, which should leave about 3ins. for fixing to the lamp-holders. To avoid confusion, make one set of four wires in black-covered and the other in red.

Fix the smaller cross into position to cover the wires, either by gluing or with pins, punched and filled. If the wires twist awkwardly out of the grooves, hold them in place with

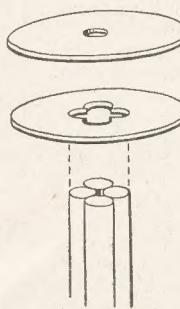


Fig. 2—The circular ends

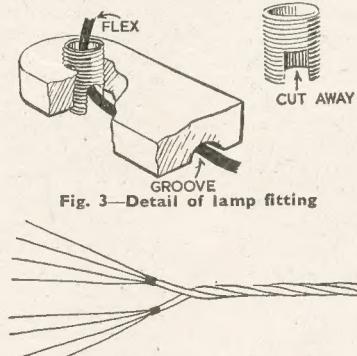


Fig. 3—Detail of lamp fitting

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some thin strips of sticky paper before fixing the smaller cross.

The Shades

Next we come to the four upright shades. These are quite easy to make, but look very effective, matching the fluted effect given by the broomsticks in the down stem.

The frame consists merely of four wire rings 3ins. in diameter and four pieces of tin 3ins. in diameter with a $1\frac{1}{2}$ in. hole in the centre of each. You will need 28 pieces of parchment or plastic lampshade material, each 5ins. by 3ins. so a piece 3ft. by 1 ft. will suffice.

Punch two holes in each one $\frac{3}{8}$ in. from the top and $\frac{1}{2}$ in. in from the edge, and make a cut from the hole to the edge. Cut two notches $\frac{3}{8}$ in. from the bottom, $\frac{1}{2}$ in. deep (see Fig. 5). You can sew seven of these together on the inside on a sewing machine, but to join the two ends up you will have to use wire. If you can get hold of some ready-made wire staples, it will be so much easier, or you can take some from old magazines.

Then fit the wire ring into the top of the shade, the holes clipping on to the ring. Similarly the tin disc fits into the notches at the bottom of the shade, but fix it on to the lampholder first.

A Rigid Pillar

Before staining and polishing or enamelling the woodwork, make sure that the broomsticks cannot tend to warp, as they may do. To prevent this, fix four panel-pins (shown in section Fig. 6) through two to form a locking joint.

Finally, to fix the lamp to the ceiling you can either use three short chains to the standard 3-hook ceiling rose, or screw it flush to the patchet.

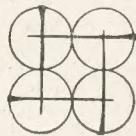


Fig. 6—Section showing nailing of pillar parts

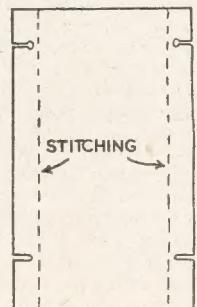


Fig. 5—Shade shape

Books to Read!

Here is a review of some recent books published, of particular interest to our readers. Obtainable from usual booksellers or from the publishers mentioned.

The Boys' Book of Engines Motors and Turbines

by Alfred Morgan

ALMOST anyone can be boy enough to enjoy reading this 280 page book, with its 260 illustrations, for it is the most interestingly informative publication on the subject we have read for a long while. It is semi-technical in character, but tells in simple language much that could be made technically drab and involved. Although written and illustrated with an American background, the knowledge it gives is international and unbiased. Its illustrations are clear, with diagrams explaining points as additional aid to the letterpress. History and facts are fitted to make an instructional story which really entertains and educates. The pages tell of steam power, oil, diesel, and electric generators and engines, covering all types in general use, the power in chemicals, in the tides, sunlight and wind. In addition, and for additional interest, the book tells how to make many experimental gadgets—a water wheel, a steam engine, a toy electric motor, etc., in addition (and a very sensible one), to a chapter on how to do the things required in the instructional details, such as soldering, drilling holes in metal, etc. A book father or son can equally enjoy.

Published by Stanmore Press, Ltd., Thurloe Street, South Kensington, S.W.7—Price 10/6.

Lino-Cutting

by Eric E. Watson

THE hobby of lino cutting is becoming more and more general, probably because it can be undertaken with very little outlay on tools and materials, apart from the interest of creation and reproduction. A reader who wants to take up the pastime may believe he has to be an artist to do the really artistic work which some can do. The book very sensibly counters that idea by showing how almost anyone—and at any age—can commence with simple work and gradually improve and experiment, until a high standard can be reached. All phases of the work (or pleasure!) are dealt with clearly, and practical illustrations of all kinds of work done by the author provide patterns and pictures for copying and suggestions of how one's own study and ability can create further subjects. The author does make you feel that the pastime is really worth

having for its joy and creative results, with little real labour or expense.

Published by Vawser & Wiles, Ltd., 555 Lea Bridge Road, London, E.10—Price 6/-.

* * *

Questions Answered on Woodwork

by F. W. Farley

ANOVEL form of handbook, concise, clear and informative, this stiff covered pocket-size edition, is one of a popular series of a similar type on many pastimes. As its name implies its contents are placed in form of question and answer, with numerous pictorial illustrations. Its four main sections deal with woodwork tools and how to use them, constructional details, finishing processes, and timber. It is ideal for the amateur handyman keen on saving himself time and trouble by finding out the best way to go to work on and with his carpentry tools.

Published by Jordan & Sons, Ltd., 116 Chancery Lane, W.C.2—Price 3/6.

* * *

Magic

by Walter B. Gibson

MOST of us are fascinated and intrigued by all kinds of conjuring and magic—whether the clever amateur at the party or the great illusions of the stage. Here is a book which does tell you all about them, from simple to difficult, and even those amazing professional acts of sawing a woman in half, walking through a brick wall, etc. The author is a magician himself, but he can explain his tricks with lucidity and simplicity which makes them easily understood and, with ample practice, suitably performed. Subjects covered form a varied entertainment, and chapters, with helpful drawings, deal with after-dinner magic, party magic, card tricks, mental magic, stage work, etc., in a manner seldom found in similar books on the subject.

Published by Nicholas Kaye, Ltd., Trebeck Street, London, W.1—Price 8/6.

* * *

Plastics in Handicraft

by P. W. Blandford

HERE is another of the numerous books on this most interesting pastime for amateurs, and one equal to any of its contemporaries in the same field. The author as a practical handicraft teacher knows his subject thoroughly and the pages are packed with instructions for those desirous

of having a comprehensive theoretical and practical knowledge. The book is freely illustrated, not only with helpful diagrams, but very many photographic pictures of literally hundreds of things which can be made. Not only does it tell you how to make them, but covers all those little awkward points which occur in actual work sometimes, but are frequently omitted from any instructions. The complete manipulation of all types of work covers a very wide field in this excellent and well printed manual.

Published by Messrs. Chapman and Hall, Ltd., 37 Essex Street, London, W.C.2—Price 15/-.

* * *

How to Make Lampshades

by F. J. Christopher

THE absurdly high cost of lamp shades has driven many a home handyman to cast about in an endeavour to make his own, and now that materials for amateurs are a little easier to obtain, this book will be a very welcome addition. We are sure that many of our own readers will find much to interest them in its helpful and closely packed pages. The various chapters deal with tools required, frames, covering, decoration, etc., and each is supplemented by clear detail drawings which make the actual constructional work quite straightforward.

Published by Bear Hudson, Ltd., 63 Goldhawk Road, London, W.12—Price 2/6.

* * *

How to Draw Planes

by Frank A. A. Wootton

ANOTHER of that highly popular "How-to-draw" series by The Studio has been published recently—well up to the standard of any of the others. Its contents seem to make ridiculously simple the creation of appealing pictures of aeroplanes at all angles and of all characteristics. The illustrations are all pencil sketches, which with the simple explanations provide complete hints on general construction, light and shade, angles, composition, ellipses, etc., which usually baffle the amateur artist. The aircraft illustrated include most of those we knew so well during the war, and proof of their continued memory is shown, that this new and revised edition of the book is the seventh published.

Published by The Studio, Ltd., 66 Chandos Place, London, W.C.2—Price 3/-.

Hints on staining tackle and making floats for THE AMATEUR ANGLER

NOW is the time to do any little indoor jobs in connection with your fishing tackle, so here are a few hints. Some anglers prefer to use gut casts and gut lines in their natural state, and do not bother to stain such. On the other hand, many experts hold that the more closely the tint of the cast and hook length harmonise with the colour of the water you are fishing, the better.

Camouflaged casts are often advocated for both fly and float fishing. Makers market gut-casts in various tints, the most popular being "mist" and "sorrel". The former is for summer use, and the latter for the heavier coloured waters of autumn and winter. Green is also much liked for all seasons.

Colouring Casts

You can, however, stain your own casts to your fancy. The "green" tint can be imparted to clear gut by immersing it in green writing ink—the longer the gut is allowed to remain in, the deeper the hue obtained. Many anglers like the green tinted gut as it matches the colour of the weeds.

The "mist" tint can be got by using blue ink, and a neutral tint by immersing the gut in blue-black ink. The "sorrel" tint (or a brown-yellow) can be imparted to gut by soaking it for some time in strong tea or coffee.

To give gut a "water colour" the following tip was given by an old angler: Take a teaspoonful of red ink, add to it as much soot, and about a third of a teacup of water. Let it simmer in an old saucepan for ten minutes. When cool steep the line or cast in it until coloured to your fancy.

Colours of gut used when fishing are generally of natural white, or clear gut, blue or "mist", peat-brown, sorrel, and green in various shades. You can obtain all these tints from the above recipe by allowing the gut to soak in the stain for varying periods of time—the longer the darker will be the hues.

Home-made Floats

Home-made floats present little difficulty. You can easily make types of floats that will answer for general angling. In these days when fishing tackle is so expensive (floats are now three and four times the price they were before 1939) and so often soon "lost" or broken, this is a consideration worth thinking about.

A useful float can be made from a medicine bottle cork. Bore a hole through the cork with a red-hot skewer or big knitting needle. Next

make a wooden peg out of a suitable piece of wood, trimming it until it is a neat fit in the hole. At one end of the peg fasten a small ring—this you can make from a bit of thin wire. Twist the wire round forming a ring, leaving two prongs about $\frac{1}{4}$ in. to $\frac{1}{2}$ in. in length. Place these one each side of the peg and bind on neatly with waxed silk or thread.

In Use

To use the float, thread your line down through the hole in the cork and then through the ring of the peg. Now insert the peg in the cork, thrusting it up until it protrudes about half-an-inch. When you desire to shorten or lengthen the line between float and hook, just ease the peg and manipulate the line as required, tightening up the peg afterwards.

Using a small medicine bottle cork, and just a matchstick for a peg as described, is good for grayling and dace fishing as any factory-made float. Perhaps it is not so elegant and well-finished, but it does its job.

A Better Finish

Of course, if you wish to make a good thing of it, you can trim the cork into a rounded shape with a razor blade, glasspapering it afterwards to render it smooth. Paint the top half of it a pillar-box red and the lower half green. In this case choose the cork somewhat larger than your finished article, to allow for the trimming down.

With practice, you can make egg-shaped floats, long-bodied floats, and round floats from different sizes of corks. Small corks out of medicine phials are useful for light fishing in moderate and slow waters, but you need heavier corks for fishing in strong and deep waters.

Egg-shaped Float

For the egg-shaped and long-bodied float (see Fig. 1) two corks may be cemented or glued together before paring into shape. If you like, instead of having a hole bored through the centre, you can whip a small ring to the top of float and another at the bottom, after plugging in at each end a short wood peg.

Bigger floats for pike fishing can be made from beer barrel bungs and similar corks, bored through for a peg to hold the line.

By the way, if you like, instead of a wood peg for these types of cork

floats, you can use a quill from a rook's feather or any suitable feather for that matter, that will fit the hole in the cork. When using cork floats with the line threaded through and held in position by the peg you no not need a float cap.

Quill Floats

Here again, you can make your own. Quills vary from the crow quill to the goose quill. The latter, of course, carries a lot more shot and is used for strong, deep waters. The lighter quills are for canal and quiet places.

Obtain the suitable quill, trim off

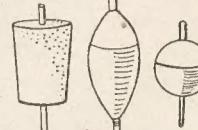


Fig. 1—Plain and shaped cork floats

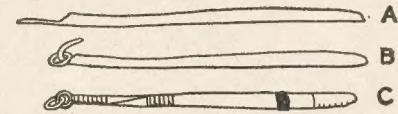


Fig. 2—Process of making a quill float

the feathers and clean up the quill. The first few inches of any quill is hollow, but above, you come to a sort of pith.

Cutting the Quill

Having got the right length you require, cut the solid part of the quill in a slanting direction to a thin kind of wedge (A, Fig. 2). The cut is made on the inside of the feather's natural curve. Now slip a small brass ring or a home-made wire ring over the strip at end of cut portion and fold back (B, Fig. 2), afterwards binding it tightly to the main quill, securing the ring.

Now put a short whipping round the part where the hollow part of the quill joins the harder portion, just to strengthen the whole (C, Fig. 2). Varnish the two whippings with shellac or celluloid varnish. When these are dry, varnish the whole float. All you require now is a rubber float cap to slide on the quill to hold the line in place.

Suitable Occasions

These simple floats are quite suitable for many kinds of fishing—perch, roach, chub, grayling, bream, and dace. The size and length of float depends upon the type of water you intend fishing.

It is advisable to make several different sizes to meet with varying requirements. In very strong waters with a fast current you need a big float to carry plenty of shot, in order to get the baited hook down to where the fish are lying.

Do your work thoroughly so there can be no chance of lost tackle due to bad workmanship.

You can often save a good mechanism by fitting NEW GEARWHEEL TEETH

MANY readers may think that fitting a new tooth to a wheel is a difficult job, but this is a mistaken idea. When you know the methods to adopt it is reasonably easy. A broken or damaged tooth is a common source of trouble in a clock, gramophone, toy or scientific instrument, and the person who can fit a new one will be in demand especially as it is still difficult to get repairs done. Few tools are needed, and these should be found in every handyman's kit. Let us start with an ordinary wheel made of thin sheet metal such as is found in clocks and toy engines. If it is a clock wheel it will undoubtedly be made of brass, but if a toy it will probably be iron or steel.

Filing Down

First carefully file down the root of the old tooth and then make a nick with the edge of a triangular file between the two good teeth. Make sure this is exactly in the centre. It may seem a trivial matter but you will not make a satisfactory job if you make a mistake at this point.

Now cut a slot from the mark to a depth equal to about one and a-half

sure that the solder flows all round but do not make it too hot, as this will soften the wheel.

With a metal fretsaw cut off the surplus metal leaving the new tooth just a little longer than the others. Now, with some fine files the working face of the tooth can be cut to match the other teeth. Any surplus solder at the base can also be cleaned out and a final polish with emery cloth will finish the job.

If it has been well done it should be difficult to find the new tooth.

Wedge Fitting

A stronger job is effected if instead of cutting the slot with straight sides it is made wedge shape as shown at Fig. 2—this is called dovetailing. Two or more teeth can be fitted to a wheel in the same manner but it is advisable not to dovetail them because the wheel would be very much weakened this way.

Where several teeth together are broken (see Fig. 3) a very satisfactory repair is obtained by the following method. Find an old wheel of the same size and with the same number and shape of teeth and cut out a piece having the same number as are damaged. After filing down the roots of the broken teeth this plate is soldered to the rim of the wheel, taking care to line up the teeth before fixing. Drilling and fixing two or three rivets will also make a stronger job.

Perhaps you cannot find another old wheel of the same size. Well then, take a piece of similar metal and lay the wheel on it. With a sharp needle point mark carefully round a few good teeth and cut out with a fretsaw and trim up with your small files.

This method can only be used when there is nothing to interfere with the free running of the wheel. If the wheel drives a pinion make sure before starting that the pinion is wide enough to take the extra thickness.

Thicker Wheels

When dealing with thicker wheels, such as a gramophone barrel, a different method is usually adopted, although you can still slot them and solder in sheet metal.

File down the root of the tooth and make a light file cut midway between the two teeth as before. Then with a

centre punch placed in the centre of this line make a dot, or if a very wide wheel two or more dots, and drill a neat upright hole as shown at Fig. 4. The drill should not be larger than half the width of the wheel, and the depth of the hole about the same as the length of the tooth.

For a wheel between $\frac{1}{8}$ in. and $\frac{1}{4}$ in. in thickness one hole is sufficient but two or more will be needed for larger ones.

The new tooth can be cut from a square shouldered screw with a fairly large head—the slot must not come below the tops of the teeth. The hole can be left plain and the screw driven in, or for a better class job the hole should be tapped and the tooth screwed in. In both cases it is best to solder as well. The tooth can now be cut to shape with files and finally polished with emery.

Other Types

Helical or skew gears can have new teeth fitted in the same way, either by slotting or drilling, taking care to keep the angle of the teeth correct.

Bevel gears are a little more difficult, but there is no reason why a very satisfactory job should not be made with them. The same methods can be adopted; just a little more care being needed in the marking out and final shaping of the teeth.

Having mastered the fairly simple task of fitting new teeth you will find endless opportunities for further practice which might easily become a very paying hobby. Even a tiny watch wheel less than $\frac{1}{8}$ in. in diameter can be fitted with new teeth by these methods.

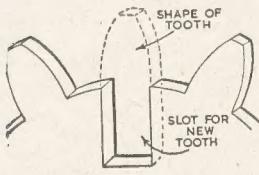


Fig. 1—Slot method of fitting

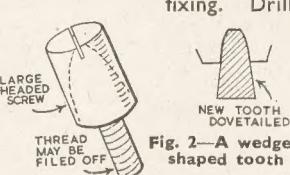


Fig. 2—A wedge shaped tooth

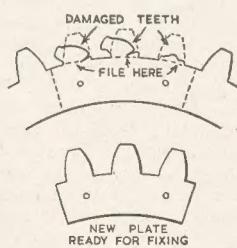


Fig. 3—Repairing a number of broken teeth

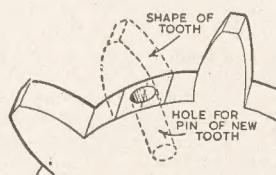


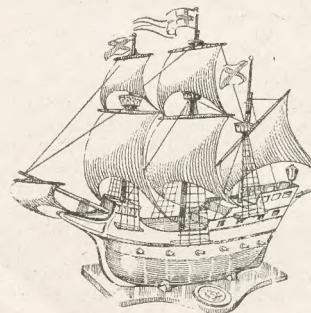
Fig. 4—A tooth plugged into a thicker type of wheel

times the length of the tooth and the exact width of the other teeth (see Fig. 1). If it is a small wheel, a metal fretsaw will do but for larger teeth a small hacksaw can be used. Carefully trim up the edges and base of the slot with a file.

Take a piece of sheet metal the same substance as the wheel is made of and, if necessary, file it to fit tightly into the slot. Gently tap it down to the base of the slot and solder it in, using a small iron or holding it over a gas flame. Make

The 1d. GALLEON

This interesting model is a replica of the galleon illustrated on a half-penny, and can be made from this week's design sheet (No. 2778). A bit of wood, guns, masts, sail parchment and cord is supplied for 3/1 by Hobbies Branches or from Dereham, Norfolk, for 3/10 post free.



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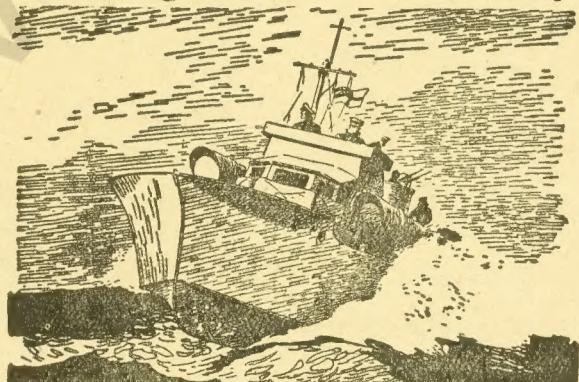
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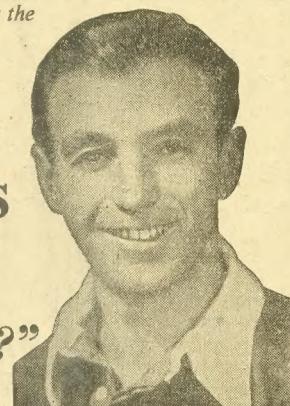
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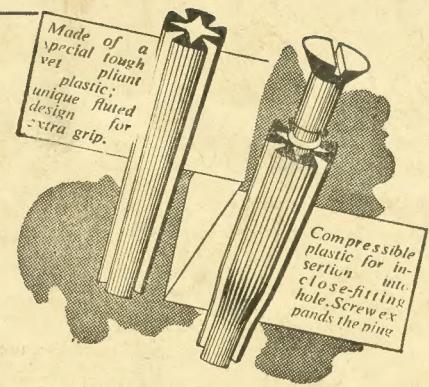
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- 3 Eyes—*Left*.
- 4 Glance again—*Right*.
- 5 If all clear—*Quick March*.

Stanley Matthews
Issued by the Ministry of Transport

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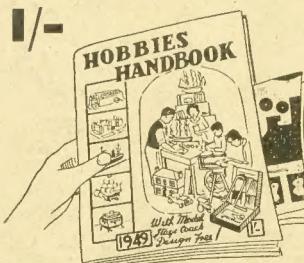
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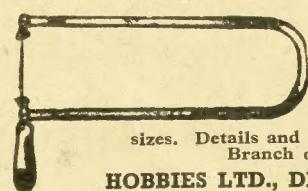
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